

Application Number 10/521871
Response to the Office Action dated February 13, 2009

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REMARKS

Favorable reconsideration of this application is requested in view of the following remarks.

Claims 34 and 35 have been canceled without prejudice or disclaimer.

Claims 1-5, 7, 9, 12, 17-26, and 30-32 have been rejected under 35 U.S.C. 102(b) as being anticipated by Suzuki et al. (Japanese Patent Application Publication No. 2002-203576). Applicants respectfully traverse this rejection.

Suzuki discloses an electrolyte film that includes a film support body having through holes and an ion conductive substance (see abstract). Suzuki also discloses a fuel cell that includes the electrolyte film and electrodes and in which the electrodes are attached to both surfaces of the electrolyte film (see *id.* and para. [0026]). Suzuki further discloses that the electrodes include an electrolyte in the catalyst bed (see para. [0028]) and that the surfaces of the electrolyte in the electrodes may be covered by water repellent layers (see *id.*, Fig. 2, and paras. [0054] and [0059]). Thus, Suzuki fails to disclose that the water repellent substance covers an inside of the through holes formed within the base material as required by claim 1. The electrolyte film of claim 1 that includes the base material having through holes is a separate part from the electrodes and different from the electrolyte in the electrodes as Suzuki discloses. To assist in understanding the disclosure in the Suzuki reference, a partial translation of the paragraphs referred to above is attached hereto. Accordingly, this rejection should be withdrawn. Applicants do not concede the correctness of the rejection for the dependent claims.

Claims 6, 8, and 33 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (Japanese Patent Application Publication No. 2002-203576) in view of Yamaguchi et al. (Japanese Patent Application Publication No. 2002-083612). Applicants respectfully traverse this rejection.

Claims 6, 8, and 33, which ultimately depend from claim 1, are distinguished from Suzuki for at least the same reasons as discussed for claim 1 above.

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Yamaguchi discloses a fuel cell having a cathode electrode, an anode electrode, and electrolyte having porous substrate, which is sandwiched by the electrodes (see abstract and para. [0021]). Yamaguchi, however, fails to disclose that an inside of the through holes of the electrolyte, which is not included in the electrodes, is covered by a water repellent substance as claim 1 requires and does not remedy the deficiencies of Suzuki. Accordingly, this rejection should be withdrawn.

Claims 11 and 13-14 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (Japanese Patent Application Publication No. 2002-203576) in view of Yamada (U.S. Patent No. 5,213,910). Applicants respectfully traverse this rejection.

Claims 11 and 13-14, which ultimately depend from claim 1, are distinguished from Suzuki for at least the same reasons as discussed for claim 1 above.

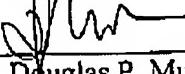
Yamada discloses a solid electrolytic type fuel cell having a solid electrolyte film that is sandwiched by a fuel electrode film and an air electrode film (see, for example, Fig. 3 and coln. 4, lines 40-42). Yamada, however, fails to disclose that an inside of the through holes of the electrolyte, which is not included in the electrode film, is covered by a water repellent substance, and Yamada does not remedy the deficiencies of Suzuki. Accordingly, this rejection should be withdrawn.

In view of the above, Applicants request reconsideration of the application in the form of a Notice of Allowance.

Respectfully submitted,

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Dated: May 13, 2009

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Partial Translation of
JP 2002-203576 A

Publication Date : July 19, 2002

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Application No. : 2000-401274

Filing Date : December 28, 2000

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Title of the Invention: ELECTROLYTE MEMBRANE AND FUEL CELL
USING THIS

20 (Page 4, right column, lines 18 - 23)

[0026] Furthermore, the gist of a second aspect of the present invention resides in a fuel cell including a membrane electrode assembly formed of an electrolyte membrane with electrodes joined to both surfaces thereof, respectively. In the fuel cell, the electrolyte membrane includes a membrane support body through which a continuous hole penetrates in a thickness direction and an ion-conducting substance introduced into an inner portion of the continuous hole.

25 30 (Page 4, right column, lines 30 - 35)

[0028] In this case, it is desirable that at least one of the electrodes have a catalyst layer that includes a catalyst or a catalyst supported by a carrier and an intra-catalyst-layer electrolyte, and a gaseous phase side surface of the intra-catalyst-layer electrolyte be coated with a water-repellent layer having reactive gas permeability. Further, it is desirable that the water-repellent layer be formed of a fluorine-based material.

(Page 6, right column, lines 22 – 25)

- 5 [0054] The anode 40a includes a diffusion layer 42a, a catalyst layer 44a, and a water repellent layer 52a. Further, the cathode 40b includes a diffusion layer 42b, a catalyst layer 44b, and a water repellent layer 52b.

(Page 7, left column, lines 14 – 25)

- 10 [0059] The water repellent layers 52a and 52b are provided so that gaseous phase side surfaces of the intra-catalyst-layer electrolytes 50a and 50b are coated therewith, respectively. There is no particular limitation on a material of the water repellent layer 52a on the side of the anode 40a, and as the material, any material can be used as long as it has hydrogen permeability that allows hydrogen contained in the fuel gas to be supplied to the catalyst layer 44a and water repellency that can suppress the discharge of water from the catalyst layer 44a to the diffusion layer 42a. However, in order to provide the anode 40a with resistance to CO, it is particularly preferable that the water repellent layer 52a is formed of a fluorine-based material whose molecule contains a C-F bond. Further, there is no particular limitation on a material of the water repellent layer 52b on the side of the cathode 40b, and as the material, any material can be used as long as it has oxygen permeability and water repellency.